United Nations Development Programme

TERMS OF REFERENCE

Title	**Feasibility Study for increasing adoption and utilization of solar water pumping (SWP) solutions in the agriculture sector**
Type of Contract	Professional Contract for Services
Start/End Dates	September 2021 – December 2021
Duration	4 months
Location	Myanmar
Supervisor	Project Manager, **Promoting the use of solar technologies for agricultural and rural development in Myanmar Project**

I. Background

UNDP Myanmar is currently implementing a regional project "**Promoting the use of solar technologies for agricultural and rural development in Cambodia and Myanmar"** with funding support from the Ministry of Agriculture, Food and Rural Affairs, Republic of Korea to strengthen resilience of the agriculture sectors in Myanmar to climate change by promoting and scaling up resilient agricultural practices, the adoption of solar technologies in irrigation and the agricultural value chain.

This project seeks to build a model for inclusive and sustainable development of rural communities in the Dry Zone by addressing the problem of (1) poor adoption of mobile technologies among rural communities, especially women, which undermines the potential of mobile communications and related information technologies as a cross-cutting means to integrate and amplify the effectiveness of development interventions; (2) weak agricultural extension services and research capacities and efficient service delivery to farmers; (3) lack of use of mobile information and communication technologies to enable access to information and to provide location-specific services for rural communities; and (4) lack of access to technology, markets, credit and energy have limited the growth of rural micro and small enterprises and excluded them from high-demand value chains. The above problems will be tackled in an integrated manner - considering both gaps in technology and systems and capacities of stakeholders and beneficiaries. In doing so, it will try to narrow the gaps between beneficiaries and service providers, including enhancing access to markets, financial services and livelihood inputs.

Lack of reliable access to water serves as a constraint on livelihoods and the development of a vibrant agriculture sector. Poor and landless farmers are particularly vulnerable to climate shocks, such as droughts and floods, and other extreme weather conditions. Lessons learned from UNDP's projects in the Dry Zone region has found that access to water and irrigation services are vital for improving smallholder production, and reducing incidences of crop failure, and enables farmers to explore improved crop varieties and fertilizers

The project aims to increase resilience of agriculture sector to climate change through three-pronged interventions: (i) supporting the uptake of resilient agricultural practices; (ii) enhancing the agricultural

value chain; and (iii) promoting and scaling up the adoption of solar technologies for water pumping and powering market facilities.

To meet the above objectives, the project will implement a set of measures that span across two key outputs.

- Output 1: Increased smallholder farm productivity through adoption of innovative agricultural technology and an improved value chain; and
- Output 2: Enhanced awareness, capacities, adoption and utilization of solar water pumping solutions**.**

Under Output 1, the project will increase smallholder farm productivity and climate resilience through the adoption of resilient and innovative agricultural practices and technology, capacity development of market actors and extension service providers, and the establishment of technology-enabled market facilities. By doing so, the project aims to address a set of barriers related to agriculture productivity - including marketing facility to link farmer products to markets and consumers; access to agriculture inputs such as resilient seeds, farm tools and innovative technologies; agricultural market information; technical know-how to improve quality and safety agricultural products for markets; and consumer trust of the farmers to supply safe agricultural products and mechanism of labelling and certification of agriculture products. It will identify active women's groups that can be nurtured to establish agri-based micro/small/medium enterprises

In Output 2, the project will also demonstrate/promote adoption and utilization of solar water pumping (SWP) solutions in the agriculture sector with the aim of reducing vulnerabilities to climate change, increasing agricultural productivity and reducing GHG emissions. This will be done through awareness creation on SWP solutions, enhancing capacities of market actors to supply, install and maintain quality SWP solutions tailored to local conditions, and installing SWP solutions in select vulnerable communities. By doing so, the project will capacitate market actors to design, install and maintain solar water pumping systems; build trust between solar companies and groundwater drilling companies; create conditions for easy access to low-cost water storage/distribution technology and related information; and provide technical support to develop new business models and innovate SWP solutions.

UNDP Myanmar seeks the services of a Service Provider to support the implementation of Output 2 related activities. The project activities will be implemented in Myingyan and Nyaung U townships which have about 130 villages and build on the achievements of the earlier UNDP project titled "Addressing Climate Change Risks on Water Resources and Food Security in the Dry Zone of Myanmar" funded by the Adaptation Fund, and Sustainable Enterprises and Agricultural Development (SEAD) Initiative co-funded by Ooredoo and UNDP. The primary reason for this is to ensure the impacts of interventions are substantive and not diluted by spreading them too thinly.

II. Objective of the Assignment

The objective of the assignment is to demonstrate/promote adoption and utilization of solar water pumping (SWP) solutions in the agriculture sector with the aim of reducing vulnerabilities to climate change, increasing agricultural productivity and reducing GHG emissions. This will be done through awareness creation on SWP solutions, enhancing capacities of market actors to supply, install and

maintain quality SWP solutions tailored to local conditions, and installing SWP solutions in select vulnerable communities.

III. Scope of Work, Outputs and Deliverables

To be able to achieve the objective of the project, the following outputs are expected to be achieved - along with detailed tasks that will have to be undertaken by the Service Provider. In close consultation with UNDP, the Service Provider will undertake the following:

- Prepare a research report on application of solar water pumping (SWP) system in the international arena and regional level by comparing Myanmar context. Recommend alternative water storage technologies to lower overall systems costs to be discovered, and innovative business model(s) of solar water pumping system suitable for the Dry Zone of Myanmar.
- Conduct feasibility study of installation of up to 5 KW SWP for irrigation and drinking water through site visits in targeted townships in Dry Zone. Consultation with different stakeholders in the village, township level and regional level (if necessary) to ensure technically sound, long term sustainability and efficient supply of water to the target community.
- Based on the feasibility study, identify at least 30 sites with 20-30 communities for the installation of SWP system mainly focusing on irrigation and drinking water in target area. It must include analysis of water availability for irrigation during all the season specifically during dry season, proposed area of land for irrigation (including length of irrigation channel from the pumping water point), number of farmers benefiting & parcel of land of each farmer, water allocation/utilisation calculation to all the farms requiring water, business model for the operation of the SWP by the community (user group model), design of solar water pumping system, detailed specification of the system and the proper layout of proposed areas. Seasonal variability of ground water and irrigation water including impact of arsenic-contamination of ground water should be taken into consideration. Testing of the water needs to be conducted for each site finalised for arsenic or any other contamination which is harmful for drinking or irrigation.
- Prepare training manual and conduct hand on training to the local technicians, engineers, local beneficiaries to design, install and maintain SWP System. Female participants shall be included. Participants shall be from targeted communities to ensure effective operation and maintenance on SWP in their villages. Also prepare the manual to form the solar water pump user group (SWPUG) about the operation and the business model (cost sharing, replacement of parts, security of SWP, timeline).
- Prepare tailored information materials on SWP system that can be disseminated among stakeholders for the awareness of usage of SWP system. Such material shall include cost benefit analysis and resource efficiency in both English and Myanmar.

Expected Outputs and Deliverables

The following deliverables need to be provided during and at the end of the prescribed period of duration.

No.	Deliverable	Timelines	Payment
1	▪ Submission of detail work plan for assignment, monitoring framework with clear and realistic indicators	10 days from the start of assignment	10%

2	▪ Submission of research report on application of solar water pumping (SWP) system in the international arena and regional level by comparing Myanmar Context.	1 Month from the start of assignment	10%
3	▪ Submission of report on feasibility study of installation of SWP for irrigation and drinking through site visit in targeted areas. ▪ Submission of report on identification at least 30 sites with 20-30 communities for the installation of SWP system mainly focusing on irrigation in target area	02 Months from the start of assignment	40%
4	▪ Submission of training manual and report on training to the local technicians, engineers, local beneficiaries to design, install and maintain SWP System. ▪ Submission of the manual to form the solar water pump user group (SWPUG) about the operation and the business model (cost sharing, replacement of parts, security of SWP, timeline). ▪ Submission of tailored information materials on SWP system along with cost benefit analysis and resource efficiency in both English and Myanmar.	3 Months from the start of assignment	40%

Institutional Arrangements

- The Service Provider will take full responsibility for the overall management of activities, and bear all substantive, operational, financial and monitoring responsibilities. The Service Provider will provide progress reports, as per agreed schedule, including detailed updates on implementation progress, results achieved, challenges, forward planning and financial delivery.
- The Service Provider shall work in close collaboration with the project managers/technical advisor who will provide day-to-day technical guidance and supervision of the tasks enlisted in the scope of work.
- A detail methodology and work plan, along with a schedule will be developed by the Service Provider in consultation with the project team.
- The Service Provider is expected to provide monthly progress report including detailed update on implementation progress, results achieved, challenges, forward planning and financial delivery.
- The Service Provider is also expected to provide updates and inputs to UNDP where these are needed to respond to corporate and external partners.
- UNDP, UNCDF and UNW will facilitate access to stakeholders and would support in the administrative and logistical preparation of visits and meetings.
- There is no additional provision to cover transportation, accommodation, and other administrative and logistics costs associated with the assignment. The service provider is expected to arrange those expenses within the limits of overall contact budget.
- The Service Provider will work closely with other service providers recruited under the Programme to ensure synergy of interventions
- The Service Provider will closely with the Project Manager, Economic Empowerment of Women and Youth in Myanmar
- The Service Provider will be expected to possess complete project management set up, including for administrative and operational matters. **UNDP will not provide any administrative support**.
- Maintain copies of original receipts for payments of goods, services, labour charges for auditing.

IV. Expected duration of the contract

The implementation period for this contract will be 4 months. The assignment will commence from 01 September 2021 to 31 December 2021.

V. Location of Work

The location of work for the assignment will be in Yangon for initial briefing, and technical discussion. Field works, implementation and monitoring of progress will be carried out in Myingyan and Nyaung U Townships in Mandalay Region.

VI. Qualifications of the Successful Service Provider at Various Levels

<table>
<tr><td rowspan="2">Qualification</td><td>Team Leader

Essential

• Master’s degree in relevant engineering and related field or applied science field
• 10 years of international professional experience in energy management solution, renewable energy research, energy efficiency and renewable energy particularly on community level solutions including solar water pumping.
Preferably
• Demonstrated experience working with authority and different stakeholder and international organizations in a developing country context, where such experience in South-east Asia is an added advantage
• Demonstrated experience in managing team with a mix of international and national experts in multi-countries context
• Demonstrated experience in implementing community level energy solution utilized by the community for agriculture
• Experience in organizing surveys to understand the needs of the communities for irrigation and their cropping pattern
• Experience in designing and facilitating capacity building processes, consultations and coordination process
• Excellent organizational skills, especially for facilitating meetings and writing reports, and
• Excellent writing, editing and oral communication skills in English is required</td></tr>
<tr><td>Team Member

Essential

• At least Bachelor’s degree in related field or applied science field
• 7 years of international professional experience in renewable energy and energy efficiency sector particularly in the field of cost-effective stand-alone renewable energy technologies with detailed technical specifications and engineering designs

Preferably

• Demonstrated experience in innovative solutions for irrigation for different farming
• Good writing, presentation and reporting skills
• Good coordination ability and team working spirit
• Good oral and communication skills in Myanmar and English
• Good interpersonal/communication skills</td></tr>
</table>

See selection criteria below:

Criteria for Selecting the Best Offer

Summary of Technical Proposal Evaluation Forms		**Points Obtainable**
1.	Bidder's qualification, capacity and experience	300
2.	Proposed Methodology, Approach and Implementation Plan	400
3.	Management Structure and Key Personnel	300
	Total	**1000**

Section 1. Bidder's qualification, capacity and experience		**Points obtainable**
1.1	Reputation of Organization and Staff/Credibility/Reliability with strong background in climate-resilient farming and resilient postharvest assessment, processing and storage systems	50
1.2	General Organizational Capability which is likely to affect implementation - Financial stability - age/size of the firm - strength of project management support - project financing capacity - project management controls - respect for the principles of the United Nations	70
1.3	Relevance of specialized knowledge and experience on similar engagements done in the region/country, preferably in dry zone of Myanmar Relevance of: - Specialized Knowledge and experience on renewable energy and SWP system in Myanmar (20 points) - Experience or similar programme/ project in the implementation of similar projects, preferably in the dry zone of Myanmar (10 points for experience in similar project and 5 points for experience in dry zone and 5 points for each projects till 70 points) - Work experience with UNDP/ major multilateral/ or bilateral programmes (20 points)	120
1.4	Quality assurance procedures and risk mitigation measures	30
1.5	Organizational Commitment to Sustainability -Organization is compliant with ISO 14001 or ISO 14064 or equivalent – 20 points	30

	-Organization is a member of the UN Global Compact -5 points -Organization demonstrates significant commitment to sustainability through some other means- 5 points, for example internal company policy documents on women empowerment, renewable energies or membership of trade institutions promoting such issues	
	Total Section 1	**300**

Section 2. Proposed Methodology, Approach and Implementation Plan		**Points obtainable**
2.1	To what degree does the Proposer understand the task?	30
2.2	Have the important aspects of the task been addressed in sufficient detail?	25
2.3	Are the different components of the project adequately weighted relative to one another?	20
2.4	Is the proposal based on a survey of the project environment and was this data input properly used in the preparation of the proposal?	55
2.5	Is the conceptual framework adopted appropriate for the task?	65
2.6	Is the scope of task well defined and does it correspond to the TOR?	120
2.7	Is the presentation clear and is the sequence of activities and the planning logical, realistic and promise efficient implementation to the project?	85
	Total Section 2	**400**

Section 3. Management Structure and Key Personnel			**Points obtainable**
3.1	Composition and structure of the team proposed. Are the proposed roles of the management and the team of key personnel suitable for the provision of the necessary services?		50
3.2	Qualifications of key personnel proposed		
3.2 a	Project Manager/Team Leader (CV required)		150
	Master's degree in relevant engineering and related field or applied science field	30	
	10 years of international professional experience in energy management solution, energy efficiency and renewable energy research	30	
	Demonstrated experience working with authority and different stakeholder and international organizations in South-east Asia	20	
	Demonstrated experience in managing team with a mix of international and national experts in multi-countries context	20	
	Demonstrated experience in implementing community level energy solution	20	

	Experience in designing and facilitating capacity building processes, consultations and coordination process	10	
	Excellent organizational skills, especially for facilitating meetings and writing reports, and excellent writing, editing and oral communication skills	20	
3.2 b	Team Members (CV required)		100
	At least Bachelor's degree in relevant engineering and related field or applied science field	30	
	7 years of international professional experience in renewable energy and energy efficiency sector	20	
	Good writing, presentation and reporting skills	20	
	Good coordination ability and team working spirit	20	
	Good oral and communication skills in Myanmar and English	10	
	Total Section 3		**300**

Cleared by:

Pem Chuki Wangdi OIC/Programme Specialist Sustainable and Inclusive Growth Unit UNDP Myanmar	

Approved by:

Mohammad Younus Deputy Resident Representative ad interim UNDP Myanmar	Mohammad Younus